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Simjian

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[54] **EXERCISE AND MASSAGING APPARATUS**

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[52] **U.S. Cl.** **128/56;** 128/58; 128/63

[51] **Int. Cl.**[2] **A61H 7/00;** A61H 11/00

[58] **Field of Search** ..... 128/57, 58, 63, 24 R, 24.2, 128/56

[56] **References Cited**

UNITED STATES PATENTS

781,683 2/1905 Shepherd ..... 128/58 UX

3,727,608 4/1973 Simjian 128/63

Primary Examiner—Lawrence W. Trapp

[57] **ABSTRACT**

An exercise and massaging apparatus comprises a support structure, motive means coupled to the support structure for operation by a person, and a belt having massaging elements to be worn by such person. Drive means couple the motive means to the belt for causing the belt and massaging elements to revolve about the belt encircled body portion of the person responsive to the operation of the motive means.

12 Claims, 5 Drawing Figures

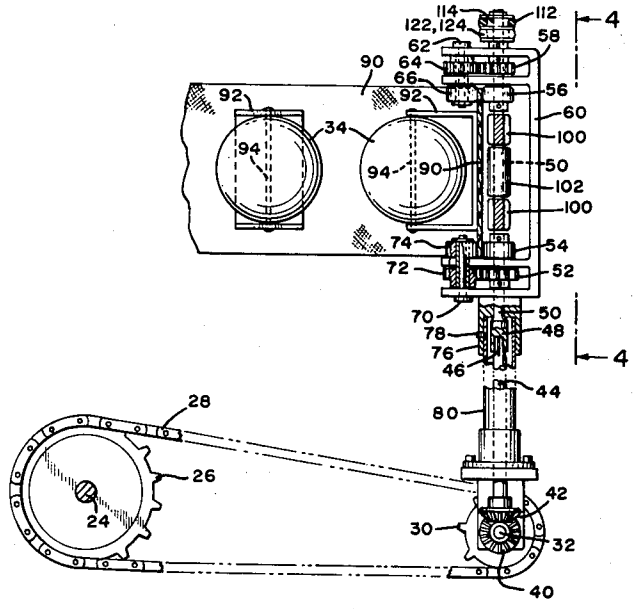


FIG. 1

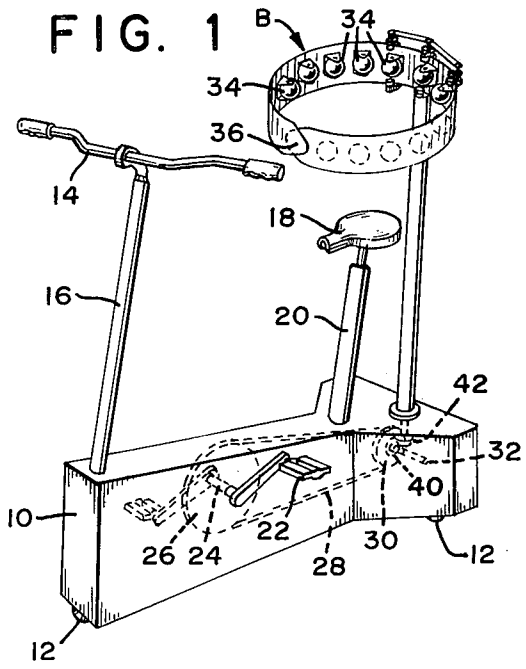


FIG. 2

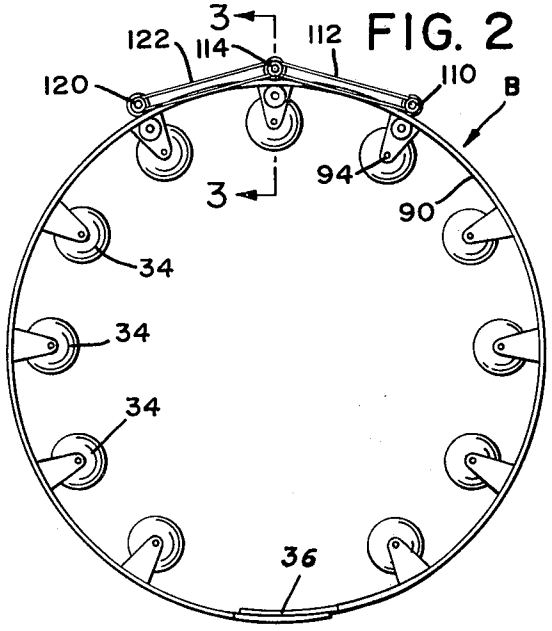


FIG. 3

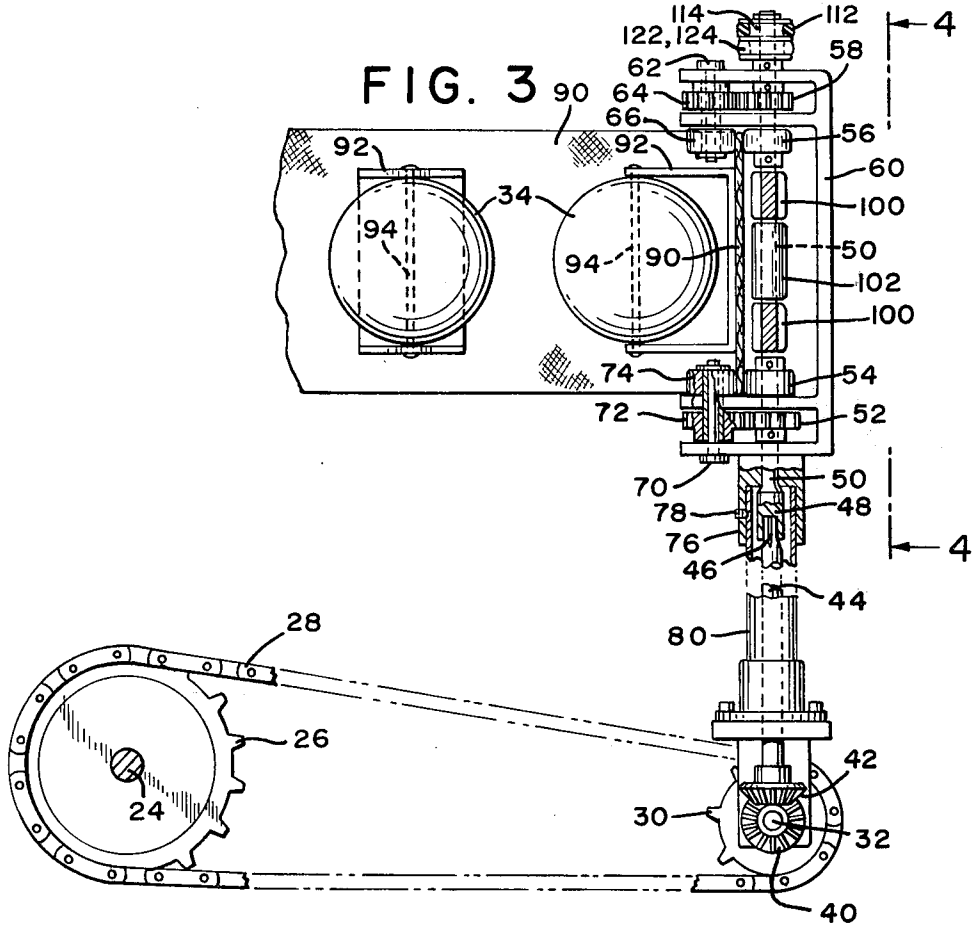
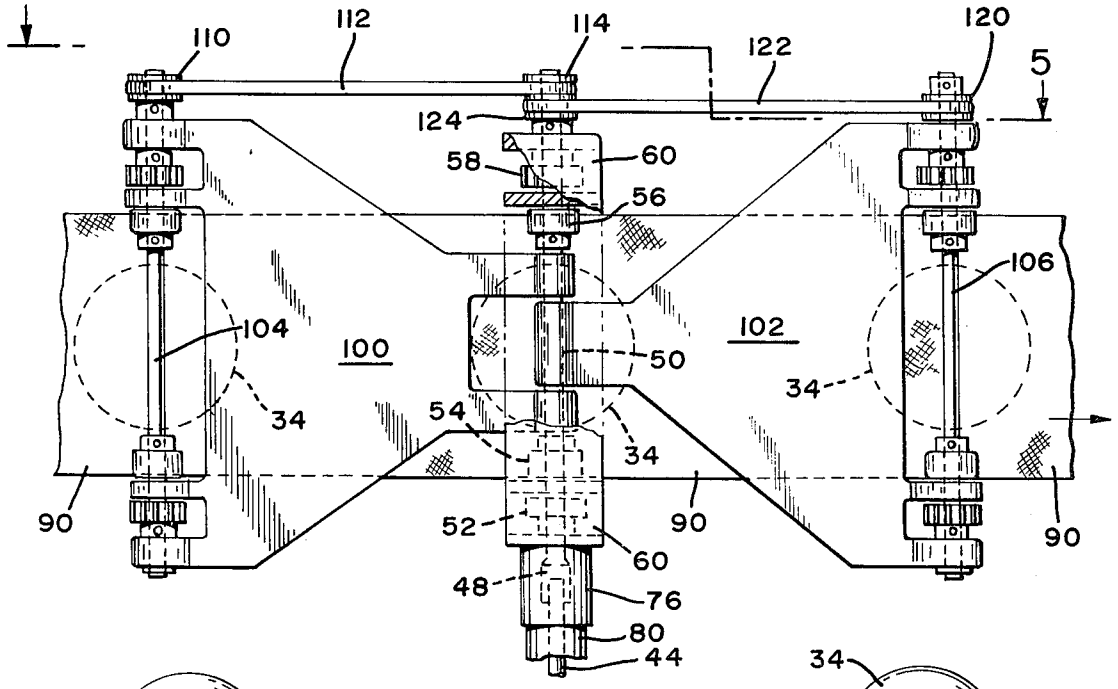


FIG. 4


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110
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114
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120
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124
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60
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34
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48
76
80
44

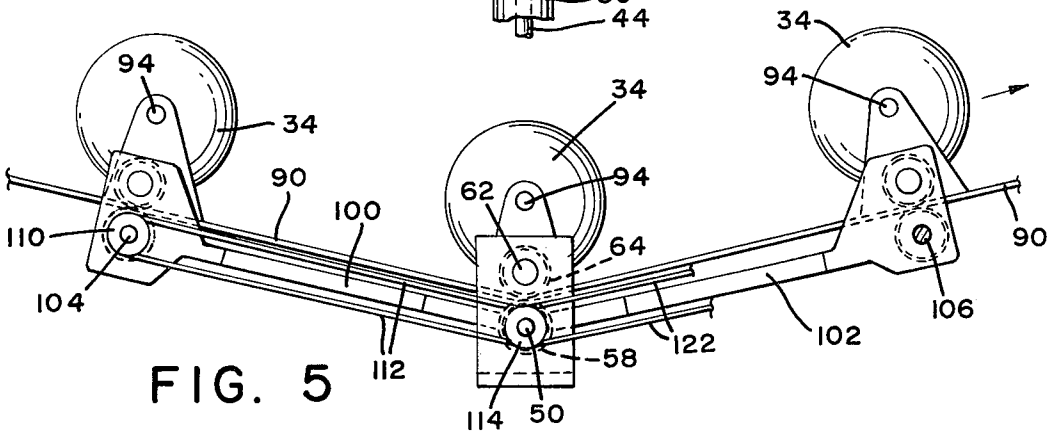

94
34
34
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34
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62
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100
110
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114
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FIG. 5

EXERCISE AND MASSAGING APPARATUS

SUMMARY OF THE INVENTION.

This invention is related to exercise and massaging apparatus as previously disclosed by me in U.S. Pat. Nos. 3,670,723; 3,727,608; 3,777,745; pending applications for U.S. Pat. Ser. No. 405,406 filed Oct. 11, 1973 and Ser. No. 487,050 filed July 10, 1974.

The above referenced patents and pending applications disclose exercise apparatus which are combined with a massaging means so that a person operating the particular apparatus for the purpose of subjecting himself to exercise receives simultaneously a massage. The intensity of the massaging action is directly related to the muscular effort expended by the person during such exercise. The exercise apparatus of the type indicated above comprises, typically, a bicycle or a rowing-type apparatus and a massaging means which, as shown previously, preferably includes resilient rollor means mounted to a massaging belt.

The present invention discloses a very similar exercise and massaging apparatus in the form of a bicycle in combination with massaging means mounted for rotation about the body portion encircled by the massaging means which has secured thereto individual massaging elements. The mechanical coupling between the exercise apparatus and the massaging means is so constructed that responsive to the motive effort expended by the user, the massaging elements are caused to undergo their revolving motion.

Specific features of the present invention will be more clearly apparent from the following description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS.

FIG. **1** is a perspective view of a preferred embodiment of the present invention;

FIG. **2** is a top plan view of the massaging means;

FIG. **3** is an elevational view, partly in section, taken along line **3—3** in FIG. **2**;

FIG. **4** is an elevational view along line **4—4** in FIG. **3**, and

FIG. **5** is a top plan view along line **5—5** in FIG. **4**.

DETAILED DESCRIPTION OF THE INVENTION.

Referring now to the figures and FIG. **1** in particular and for the sake of simplicity identifying only the most important components, there is shown a support structure **10** which rests on a floor, not shown, by a set of feet **12**. The support structure supports in elevated position by means of a tube **16** a bicycle-type handle bar **14** and a seat **18** elevated from the support **10** by means of a telescoping tube arrangement **20**. In addition, there is provided a set of foot pedals **22** of the bicycle type which are mounted upon a rotatable shaft **24** having a sprocket gear **26** secured thereupon. The shaft **24** is supported by the structure **10**. Rotation of the shaft **24** responsive to the operation of the foot pedals **22** is transmitted via a sprocket chain **28** to a sprocket gear **30** affixed upon a shaft **32**, see FIG. **3**. Rotation of the shaft **32** is transmitted via a mechanism, which will be described in connection with the other figures, to a belt B which is fitted with a plurality of massaging elements **34**. The belt B is adapted to be fastened around the waist or torso of the user sitting on the seat **18** and can be closed by Velcro fastening means or other suitable

buckle means **36** for adjusting closing the belt around the waist or torso of the particular person. This adjustment is used also for selecting the engagement force between the massaging elements and the body. Responsive to the rotation of the pedal shaft **24** and of the shaft **32**, the belt B with massaging elements **34** secured thereupon is caused to revolve around the encircled body portion of the wearer, which action, of course, provides a massaging effect and the speed of rotation being directly responsive to the expenditure of muscle power, that is, the operation of the pedals.

The detailed mechanism for accomplishing the above massaging action will be more clearly evident from FIGS. **2** through **5**. Referring now to these figures, a miter gear **40** is secured to shaft **32** and gear **40** meshes with a corresponding miter gear **42** secured upon a vertically disposed drive shaft **44** which has a splined end **46**. The splined end **46** is engaged by the termination **48** of a shaft **50** which has secured thereupon a gear **52**, a roller **54**, a roller **56** and a gear **58**. The shaft **50** is supported in a C-shaped bracket **60** which supports also the stub shaft **62** having secured thereupon a gear **64** meshing with gear **58** and a roller **66** driven by the shaft **62** and the gear **64**. Similarly, the opposite end bracket **60** supports a shaft **70** having secured thereupon a gear **72** meshing with gear **52** and a roller **74** driven by a combination of the shaft **70** and the gear **72**. The bracket **60** is supported by a sleeve **76** which is secured by means of a set screw **78** to a tubular sleeve **80**.

Flexible belt material such as leather, cloth or plastic belting **90** is fed at its laterally spaced margins between drive means comprising the rollers **54** and **74** and **56** and **66** respectively so that the belt is fed through the rollers in response to the operation of the pedal means **22**, gear **26**, sprocket **28**, sprocket **30**, miter gears **40** and **42**, and drive shafts **44** and **50**. The belt is equipped with a plurality of spaced C-shaped holders **92**, each being provided with a shaft **94** having mounted thereupon a respective massaging element **34**. The massaging elements, preferably, are of firm material and may be of spherical or cylindrical shape adapted to rotate about their respective shafts or, if fixedly mounted to the shaft is adapted to rotate in its respective C-shaped holders. Therefore, if the belt B is fastened in a manner so as to encircle a particular body portion and the pedals are operated, the massaging elements will engage the encircled body portion and revolve about the encircled body portion at the speed commensurate with the operation of the pedals.

In order to provide additional driving means and to continue the driving force upon the belt when the closure **36** traverses the area of the rollers **74, 54, 56** and **66**, there is provided a left and right bracket **100** and **102** respectively, see FIG. **4**, each bracket hooking with its inner end to the central drive shaft **50** and each bracket supporting at its outer end a respective drive shaft **104** and **106**. Drive shaft **104** is driven by means of a pulley **110** secured to the shaft **104** and a flexible belt **112** looped around pulley **114** which is attached to the central drive shaft **50**. Similarly, the shaft **106** is driven by a pulley **120** secured to the shaft **106** and a flexible belt **122** and a pulley **124** secured to the drive shaft **50**. Each of the shafts **104** and **106** is equipped with a similar set of gears and pulleys as described and shown in FIG. **3**, but for the sake of simplicity not repeated once again. Thus, the driving of the belt is continued despite a reduction in width at the area of the

belt closure **36** seen in FIGS. **1** and **2**.

It will be apparent that instead of mounting the belt with its massaging elements from the rear of the seat **18**, the belt may be mounted and driven from a position in front of the seat without deviating from the principle of the present invention. Moreover, whereas in the embodiment illustrated the belt will be driven in one rotation during operation of the foot pedals, a reversal of the rotation may be achieved either by cyclically reversing the direction of rotation of the foot pedals, or by introducing a reversing gear which at the option of the user may be coupled into and out of the driving mechanism. Alternatively, a mechanism, such as the well-known pitman, may be utilized in order to convert rotary motion to cyclic reciprocating motion whereby to obtain rotation of the belt B in one direction followed by a reversal, which cycle, of course, is constantly repeated. A cyclic reversal of the belt direction can be obtained very easily also by a rowing-type apparatus in which a lever, pivotally mounted, is operated by the hands as has been shown in my previous patents supra. In this connection it shall be clearly understood that the word encircling as used in the foregoing specification shall not be interpreted as requiring a complete circle of 360° but that the belt may be open-ended, similar to a bracelet. This construction can be achieved by making the belt of self-supporting structural material, such as spring steel.

While there has been described a certain preferred embodiment of the present invention and various modifications and changes have been indicated, it will be apparent to those skilled in the art that various further changes may be made therein without departing from the principle of the present invention which shall be limited only by the scope of the appended claims.

What is claimed is:

1. An exercise and massaging apparatus (as set forth in claim **2**) for use by a person comprising:

a support structure;

motive means coupled to said structure for operation by the person;

a belt for encircling, when worn, a body portion of the person, said belt including a plurality of spaced holders, each holder supporting a respective massaging element positioned for engaging the body of the person at the portion encircled by the belt;

means coupling said motive means to said belt for driving said belt about the encircled portion and causing said respective elements to revolve about such portion and in contact therewith, and

said belt having closure means for adjustably closing the belt to adjust the engagement force between said massaging elements and the encircled body portion.

2. An exercise and massaging apparatus as set forth in claim **1**, said means coupling including rotatably mounted roller means driven by said motive means disposed for feeding said belt and driving said belt about the encircled body portion.

3. An exercise and massaging apparatus as set forth in claim **2**, said massaging element comprising a relatively firm rolling member.

4. An exercise and massaging apparatus as set forth in claim **1**, said belt being flexible, and each of said holders including means for rotatably mounting a respective massaging element.

5. An exercise and massaging apparatus as set forth in claim **4**, said means for rotatably mounting a respective massaging element comprising a respective shaft.

6. An exercise and massaging apparatus as set forth in claim **3**, said roller means engaging said belt at laterally spaced margins.

7. An exercise and massaging apparatus for use by a person comprising:

a stationary support structure;

motive means which include pedal means coupled to said structure for operation by the person;

a seat for use by the person secured to said structure;

a belt disposed for encircling a portion of the torso of the person seated on said seat, said belt including a plurality of spaced holders, each holder supporting a respective massaging element positioned for engaging the torso portion of the person, and

coupling means which include rotatably mounted roller means engaging said belt at laterally spaced margins and driven by said motive means disposed for driving said belt about the encircled torso portion.

8. An exercise and massaging apparatus as set forth in claim **7**, said belt being driven at a rotational speed commensurate with the speed of operation of said motive means.

9. An exercise and massaging apparatus as set forth in claim **7**, said coupling means further including gear means.

10. An exercise and massaging apparatus for use by a person comprising:

a stationary support structure;

motive means coupled to said structure for operation by the person;

a belt for encircling, when worn, a body portion of the person, said belt including a plurality of massaging elements adapted to engage the encircled portion;

drive means engaging said belt supported by said structure, and

means coupling said motive means to said drive means for causing said drive means to rotate said belt about the encircled portion responsive to the operation of said motive means, whereby said massaging elements revolve about said portion.

11. An exercising and massaging apparatus as set forth in claim **10**, said motive means including pedal means.

12. An exercise and massaging apparatus for use by a person comprising:

a stationary support structure;

motive means coupled to said structure for operation by the person;

a belt for encircling, when worn, a body portion of the person, said belt supporting a plurality of massaging elements adapted to engage the encircled portion;

bracket means supported from said support structure;

drive means for engaging said belt supported by said bracket means, and means coupling said motive means to said drive means for causing said drive means to rotate said belt about the encircled portion responsive to the operation of said motive means, whereby said massaging elements revolve about said portion.

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